

IN THE CLAIMS:

Please note that all claims currently pending and under consideration in the referenced application are shown below, in clean form, for clarity.

Q1 1. (Four Times Amended) A method of electrically connecting a semiconductor die to a first substrate when said semiconductor die is attached to second substrate having an upper surface without recesses therein, comprising:

providing one of a semiconductor die having a surface having a plurality of bond pads extending along a longitudinal axis of said die on said surface and a semiconductor die having a surface having a plurality of bond pads extending in a leads-over-chip configuration on said surface;

providing a second substrate having a die side surface, a second attachment surface, at least one via extending through the substrate from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface and on the die side of the second substrate;

applying an adhesive to a portion of the die side of the first substrate to attach the semiconductor die thereto;

attaching the surface having a plurality of bond pads thereon of the semiconductor die to the die side surface of said second substrate so that the semiconductor die is located above the second substrate;

connecting said plurality of bond pads of the semiconductor die to said plurality of bond pads on the second attachment surface of said second substrate using a plurality of wire bonds, said plurality of wire bonds extending through said at least one via extending through said second substrate;

filling at least a portion of the via in the substrate with a sealant;

connecting said second substrate to said first substrate having said second located solely on one side of said first substrate without any portion of said first substrate being located below

6' said upper surface of said second substrate and portions of said plurality of bond wires extending between the die side surface of said second substrate and a die side surface of said first substrate, the connections between said first substrate and said second substrate formed by one of a plurality of solder balls and a plurality of pins.

5. (Twice Amended) A method of electrically connecting a semiconductor die to a master board, comprising:
providing a semiconductor die having a plurality of bond pads thereon;
providing a master board having a plurality of circuit traces on an upper surface thereof, said upper surface having no recesses therein;
providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the board;
providing a plurality of electrical connectors for connecting the plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;
attaching said semiconductor die to a portion of the die side surface of the board;
connecting said plurality of bond pads of said semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds, said plurality of wire bonds extending through the plurality of vias extending through then board; and
connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board using one of a plurality of solder balls and a plurality of pins, said board being located above the upper surface of said master board.

8. (Previously Four Times Amended) A method of electrically connecting at least two semiconductor die to a first substrate for connection to circuit traces on the upper surface of a second substrate, said upper surface having no recesses therein for a semiconductor die, comprising:

providing at least two semiconductor die, each semiconductor die being one of a semiconductor die having a surface having a plurality of bond pads extending along a longitudinal axis of said die on said surface and a semiconductor die having a surface having a plurality of bond pads extending in a leads-over configuration on said surface;

providing a substrate having a die side surface, a second attachment surface, at least two vias extending through the substrate from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the substrate;

applying an adhesive to a portion of the die side of the substrate to attach each semiconductor die thereto;

attaching the surface having a plurality of bond pads thereon of a semiconductor die of the at least two semiconductor die to the die side surface of the substrate having the plurality of bond pads of the semiconductor die located over one of the at least two vias extending through the substrate;

filling at least a portion of each via in the substrate with a sealant; and

connecting said plurality of bond pads of the semiconductor die to said plurality of bond pads of said substrate using a plurality of wire bonds, said plurality of wire bonds extending through the one via extending through the board of the at least two vias extending through the substrate; the second attachment surface having bond pads for the at least two semiconductor die electrical connection with said traces on said upper surface of said second substrate using one of a plurality of solder balls and a plurality of pins, said first substrate for locating above the upper surface of said second substrate.

12. (Previously Three Times Amended) A method of electrically connecting a plurality of semiconductor die to a master board, comprising:

providing a plurality of semiconductor die, each semiconductor die being a semiconductor die having a plurality of bond pads extending along a longitudinal axis of said die on said surface and a semiconductor die having a surface having a plurality of bond pads extending in a leads-over configuration on said surface;

providing a master board having a plurality of circuit traces located on an upper surface thereof, said upper surface being free of any recess for the location of a semiconductor die therein;

providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the board;

61 providing a plurality of electrical connectors for connecting the plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;

attaching each semiconductor die of the plurality of semiconductor die to a portion of the die side surface of the board;

connecting said plurality of bond pads of each semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds, said plurality of wire bonds extending through the plurality of vias extending through the board; and

connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on said master board using one of a plurality of solder balls and a plurality of pins, said board being located above the upper surface of said master board.

26. (Four Times Amended) A method of attaching a semiconductor die to a first substrate for attaching said first substrate to a second substrate having an upper surface free of recesses for semiconductor die and having a plurality of circuit traces thereon, comprising:

providing one of a semiconductor die having a surface having at least one bond pad located along a longitudinal axis of said die on said surface and a semiconductor die having a surface having at least one bond pad extending in a leads-over configuration on said surface; providing a first substrate having a die side surface, a second attachment surface, at least one via extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and at least one bond pad located on the second attachment surface of the first substrate; filling a portion of the via in the substrate with a sealant applying an adhesive to a portion of the die side of the substrate to attach the semiconductor die thereto; attaching the surface having at least one bond pad thereon of the semiconductor die to the die side surface of said first substrate; connecting said at least one bond pad of the semiconductor die to said at least one bond pad of said first substrate using at least one wire bond, said at least one wire bond extending through said at least one via extending through said substrate; and attaching said first substrate to said upper surface of said second substrate using one of a plurality of solder balls and a plurality of pins.

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30. (Three Times Amended) A method of attaching a semiconductor die to a master board, comprising:
providing a semiconductor die having at least one bond pad thereon;
providing a master board having at least one circuit trace on an upper surface thereof, said upper surface free of any recess for the receipt of a semiconductor die therein;
providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, at least one circuit, and at least one bond pad located on the second attachment surface of the board;

providing at least one electrical connector for connecting the at least one bond pad located on the second attachment surface of the board to the at least one circuit trace of the master board;

attaching said semiconductor die to a portion of the die side surface of the board;

connecting said at least one bond pad of said semiconductor die to said at least one bond pad of said board using at least one wire bond, said at least one wire bond extending through the plurality of vias extending through the board; and

connecting said board and master board using said at least one electrical connector on said board to said at least one circuit trace on said master board using at least one of at least one solder ball and at least one pin as a connector.

G1 33. (Previously Four Times Amended) A method of attaching at least two semiconductor die to a first substrate for connection to a second substrate having at least one circuit on an upper surface thereof, said upper surface without any recess for the receipt of at least one semiconductor die therein, comprising:

providing at least two semiconductor die, each semiconductor die being one of a semiconductor die having a surface having at least one bond pad extending along a longitudinal axis of said die on said surface and a semiconductor die having a surface having at least one bond pad extending in a leads-over configuration on said surface;

providing a first substrate having a die side surface, a second attachment surface, at least two vias extending through the first substrate from the die side surface to the second attachment surface, at least two circuits, and at least two bond pads located on the second attachment surface of the first substrate;

applying an adhesive to a portion of the die side of the substrate to attach each semiconductor die thereto;

attaching the surface having at least one bond pad thereon of a semiconductor die of the at least two semiconductor die to the die side surface of the first substrate having the at least one

bond pad of the semiconductor die located over one of the at least two vias extending through the first substrate;

connecting said at least one of each of the semiconductor die to said at least two bond pads of said first substrate using at least two wire bonds, at least one wire bond of said at least two wire bonds extending through the one via extending through the board of the at least two vias extending through the substrate; the second attachment surface having bond pads for the at least two semiconductor die for electrical connection with an electrically conductive circuit connected to said pads;

61 filling at least a portion of each via in the first substrate with a sealant; and

connecting said first substrate to the upper surface of the second substrate using one of at least one solder ball and at least one pin.

37. (Previously Twice Amended) A method of attaching a plurality of semiconductor die to a master board, comprising:

providing a plurality of semiconductor die, each semiconductor die being one of a semiconductor die having at least one bond pad extending along a longitudinal axis of said die on said surface and a semiconductor die having a surface having a plurality of bond pads extending in a leads-over configuration on said surface;

providing a master board having a plurality of circuit traces on the upper surface thereof, the upper surface being free of semiconductor die recesses therein;

providing a board having a die side surface, a second attachment surface, a plurality of vias extending through the board from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the board;

providing a plurality of electrical connectors for connecting the plurality of bond pads located on the second attachment surface of the board to the circuit traces of the master board;

attaching each semiconductor die of the plurality of semiconductor die to a portion of the die side surface of the board;

connecting said at least one bond pad of each semiconductor die to said plurality of bond pads of said board using a plurality of wire bonds, said plurality of wire bonds extending through the plurality of vias extending through then board; and

6 connecting said board and master board using said plurality of electrical connectors on said board to said plurality of circuit traces on the upper surface of said master board using one of solder balls and pins as connectors.
